eSL Series
(+ eSLZ000)

Recorder Macro for Assembler

APPLICATION NOTES

ELAN MICROELECTRONICS CORP.

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Application Notes Revision History

Doc. Version	Revision Description	Date
1.0	Initial Official Release Version	2006/12/18
1.1	Modified SPI address mode to byte only.	2007/04/23

1 Recorder Macro List

1.1 Recorder Macro List

Macro Name	Function Describe
RECADCON	Turn on corresponding ADC function for recorder
RECON	Start to record
RECOFF	Stop current recording
RECCHECK	Check the recording status
RECADDR	Get current data point of recorder

2 Recorder Macro Table

2.1 Recorder Macro Table

Macro Syntax	Operation
RECADCON rec_chs, rec_adclk	rec_chs=2~5, rec_adclk=0~5
RECON spi_addr, max_size, encoding_type, voice_output	spi_addr=0~4, 294, 967, 295 (unit:byte), max_size=0~4, 294, 967, 295 (unit:byte), encoding_type=1~5, voice_output=0~7
RECOFF	-
RECCHECK Pathname	-
RECADDR	(the data point will be stored in R1 (high address) and R0 (low address))

3 Recorder Macro Description

3.1 Recadcon

■ **Syntax:**

RECADCON rec_chs, rec_adclk

■ **Operation:**

rec_chs: ADC analog input channel select (2 ~ 7)

rec_adclk: ADC clock source (0 ~ 5)

■ **Definition:**

This macro will turn on the corresponding ADC function for recorder. It will set ADC analog input as **rec_chs** and set ADC clock as **rec_adclk**. After executing this macro, ADC is enabled and set as single mode.

■ **Example:**

```
AUDIO_INI
PLAYHEAD 10
MIC_ON 1,0              ;Enable MIC
RECADCON 5, 3           ;Turn ADC, set PA.5 as adc input,
                         set ADC clock as Fpll/64, and single
                         mode
RECON 8, 32700, 2, 1    ;Starting to record from address 8,
                         maximum record size is 32700 bytes,
                         encoding_type is ADPCM, voice
                         output to DAC
```

3.2 Recon

■ Syntax:

RECON spi_addr, max_size, encoding_type, voice_output

■ Operation:

spi_addr: The recorder start address (0~4, 294, 967, 294/unit**:** byte)

max_size: The maximum size that can be used in recorder (0~4, 294, 967, 295/unit**:** byte)

encoding_type: Select encoding type (1~5)

voice_output: Select recorder voice output (0~7)

NOTE

The value of SPI recorder start address must be in even number.

■ Definition:

This macro will start the recording operation. The record start address is **spi_addr**, the maximum record file size is **max_size**, and the record encoding type is **encoding_type**. The record operation supports voice output function. It can record and output voice to DAC/PWM at the same time.

Encoding_type = 1: PCM (Type 5), the bit rate is 96kbps at sampling rate = 8KHz.

Encoding_type = 2: ADPCM, the bit rate is 32kbps at sampling rate = 8KHz.

NOTE

This ADPCM differs from speech Type 4 and Type 6. If you want to play recorder ADPCM, you must select recorder ADPCM in the Coding Type dialog.

Encoding_type = 3: Type 3, the bit rate is 20Kbps at sampling rate = 8KHz.

Encoding_type = 4: Type 3, the bit rate is 16Kbps at sampling rate = 8KHz.

Encoding_type = 5: Type 3, the bit rate is 12Kbps at sampling rate = 8KHz.

Voice_output = 0: Voice will not output at the same time.

Voice_output = 1: Voice is output to DAC at the same time.

Voice_output = 2: Voice is output to PWM at the same time.

Voice_output = 3: Voice is output to both DAC and PWM at the same time.

Voice_output = 4: Voice will not output at the same time, and AGC function is enabled.

Voice_output = 5: Voice is output to DAC at the same time, and AGC function is enabled.

Voice_output = 6: Voice is output to PWM at the same time, and AGC function is enabled.

Voice_output = 7: Voice is output to both DAC and PWM at the same time, and AGC function is enabled.

NOTE

AGC (Auto Gain Control) will adjust REC Gain. If this function is enabled, you can control the voice volume.

■ **Example:**

```
AUDIO_INI
PLAYHEAD 10
MIC_ON 1,0              ;Enable MIC
RECADCON 5, 3           ;Turn ADC, set PA.5 as adc input, set
                         ADC into single mode and ADC clock
                         as Fpll/64.
RECON 8, 32700, 2, 1    ;Start recording from Address 8,
                         maximum record size is 32700 bytes,
                         encoding type is ADPCM, voice is
                         output to DAC
```

NOTE

1) *If the speech/melody option is S1 + S2 or S1 + Melody, the recorder sampling frequency is set by **S1FREQ** and the recorder volume is set by **S1VOL**.*
2) *If the speech/melody option is S2 or melody only, the sampling recorder frequency is set by **S2FREQ** and the recorder volume is set by **S2VOL**.*

3.3 Recoff

■ **Syntax:**

RECOFF

■ **Definition:**

Stop current recording

■ **Example:**

```
RECOFF                  ;Stop current recording
```

3.4 Reccheck

■ **Syntax:**

RECCHECK Pathname

■ **Definition:**

This macro will check the recording status. If currently recording, it will jump to the path (label).

■ **Example:**

```
RECON 8, 32700, 2, 1    ;Start recording from Address 8,
                         maximum record size is 32700 bytes,
                         encoding type is ADPCM, voice is
                         output to DAC
…
RECCHECK SUBR           ;Check whether currently recording
                         or not.  If yes, jump to SUBR.
…
SUBR:
R0 = #0x0001
```

3.5 Recaddr

■ **Syntax:**

RECADDR

■ **Definition:**

This macro will get the current data point of recorder. The data point will be stored in R1 (high address) and R0 (low address).

■ **Example:**

```
RECON 8, 32700, 2, 1 ;Start recording from Address 8,
                      maximum record size is 32700 bytes,
                      encoding_type is ADPCM, voice is
                      output to DAC
…
CCC:
RECCHECK CCC         ;Checking stopped
RECADDR              ;After executing this macro, R1:R0
                      is the end address + 1 of the record
                      file
```

4 Recorder Memory Allocation

The Recorder Memory Allocation is the same as speech memory allocation.

4.1 S2 or Melody Only

You can only either playback speech or record speech in Channel 2 at a time. You cannot play and record speech at the same time.

4.2 S1 + S2 or S1 + Melody (Set to Support Algorithm Types 2, 4, & 5 only)

You can playback speech in Channel 2 and record speech in PCM/ADPCM at the same time. When starting to record speech, the speech playback in Channel 1 is turned off. If you want to record in Type 3 algorithm, all playback speech are turned off.

NOTE

The usable speech algorithms in this memory allocation are listed in the separate eSL Assembler Macro Reference Guide.

4.3 S1 + S2 or S1 + Melody (Set to Support All Algorithms)

You can playback speech in Channel 2 and record speech in PCM/ADPCM at the same time. When starting to record speech, the speech playback in Channel 1 is turned off. If you want to record in Type 3 algorithm, all playback speech are turned off.